

ROSEBUD ISLAND PROTECTION PROJECT

Navigation Pool 7, La Crosse County, Wisconsin

LA CROSSE DISTRICT

**UPPER MISSISSIPPI RIVER NATIONAL
WILDLIFE AND FISH REFUGE**

FINAL ENVIRONMENTAL ASSESSMENT

April 2003

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1. Purpose and Need

1.1 Purpose

Considerable shoreline erosion occurred to a complex of three small islands located off the southeast tip of Rosebud Island (River Mile 703 L) during the 2001 flood. The force causing island erosion is primarily wave action. The purpose of this project is to protect the downstream shorelines of each island in this complex to reduce erosion.

1.2 Need

The complex of three small islands protects beds of submersed and rooted floating aquatic plants from excessive wave action. About 80 acres of shallow backwater habitat are protected, and nearly 50% of these acres are vegetated. This habitat type supports a diverse aquatic plant community and is important habitat for fish, waterfowl (puddle and diving ducks, geese, and swans), other migratory birds (raptors and wading birds such as great blue herons and great egrets), furbearers (muskrats), and amphibians. The islands also provide habitat for a variety of wildlife including birds (songbirds, raptors, wading birds, and nesting waterfowl) and mammals (deer and raccoons).

When islands are lost due to erosion, more than island habitat is lost. River currents or wind-generated waves enter the once protected area, uprooting some of the vegetation beds. The waves continue to build in size and eventually stir up bottom sediments. Once the sediment is suspended in the water, it blocks out the light submersed plants, such as wildcelery (*Vallisneria spiralis*), need to grow. Wave action may also prevent plants from re-colonizing areas. Wave action also levels the bottom as high spots erode and deeper areas fill with sediment. The result is a loss of depth diversity.

1.3 Decisions that Need to be Made

The Regional Director, U.S. Fish and Wildlife Service (Service), Region 3, will use this environmental assessment to select an alternative, to determine if the selected alternative could have a significant effect on the human environment requiring preparation of an environmental impact statement, or to make a finding of no significant impact.

1.4 Background

The southeast tip of Rosebud Island is located in the SE 1/4 of Section 31, T.17N.-R.7W., Town of Onalaska, La Crosse County, WI (Figure 1).

Impoundment of the Upper Mississippi River increased water levels throughout much of the year. This resulted in permanently flooding the river valley and creating numerous islands. Erosion by waves, ice, and river currents has reduced the number and acreage of islands in the

lower section of many pools. Lower Pool 7 and Lake Onalaska is no exception. In 1979, the island complex located off the tip of Rosebud Island consisted of two islands with a combined area of about 3.5 acres. In 2001, this same complex consisted of three islands with a combined area of about 2.8 acres (Figure 2). Nearly 20% of the island acreage has eroded away. Equally important, the eastern most island in the complex has been so reduced in size that it may cease to exist after the next flood event. Therefore, there is some urgency in stabilizing these shorelines now.

Resource agencies have made protecting the shorelines of existing islands a priority in recent years. Examples in lower Pool 7 and Lake Onalaska include Island 91, Red Oak Ridge Island and several small islands that surround it, and two islands in the barrier island chain located in the extreme southwest corner of the lake. Island creation has also occurred through the 1989 Lake Onalaska Environmental Management Program habitat project.

2. Alternatives

2.1 Alternatives not Considered for Detailed Analysis

Restoring the island complex to the size that existed immediately after the Lock and Dam System was completed in the 1930's was an alternative not considered for detailed analysis. The time to plan and implement this alternative would be measured in years and more of the island complex may disappear before full restoration is accomplished.

Construction during winter was a second alternative not considered for detailed analysis because of safety and logistical concerns. The project location requires crossing flowing water channels where ice thickness would vary and where travel could be dangerous. An ice thickness of 36" is desired before allowing heavily loaded dump trucks to cross; the chance of finding these ice conditions in this area of Lake Onalaska is consistently low. Also, it is not contractually feasible to have a rock supplier on stand-by notice to deliver in the event that adequate ice conditions are met.

2.2 Alternatives Carried Forward and Analyzed

2.2.1 Alternative A (Proposed Action)

Based on the recommendations of the U.S. Army Corps of Engineers (USACE), the proposed action is to protect the remaining shorelines in this island complex by utilizing a combination of offshore and nearshore structures. Four offshore structures would be constructed, including three rock mounds and one experimental rock/log island (Figures 3 and 4). Additionally, the nearshore structure technique to be used is the construction of a rock wedge along a section of shoreline located on the small, outer island in the complex (Figure 5).

The layout of the offshore structures consists of four structures approximately 50' from the shoreline with gaps in between them (Figure 6). These structures will be positioned along the downstream, or south, side of the complex to breakup wave energy resulting from southerly winds, the direction when most of the erosion occurs. The total length of the four structures displayed in Figure 3 is about 750'. The advantage of the gaps is to reduce costs. Although the gaps will allow some waves to affect the shoreline, the erosive energy of the waves will be reduced by diffraction.

Most of the four offshore structures will be constructed in 3' to 4' of water with adjacent access depths of 4' or greater. This should reduce or eliminate the amount of access dredging required to construct the four offshore structures if shallow draft equipment can be used. Access and construction of these structures should not be dependant on higher river flows.

The cost of stabilization using rock mounds constructed in 3' of water is approximately \$120 per foot. The cost of a rock/log island is \$240 per foot (Table 1). This structure is experimental in nature so the cost estimate is on the high side to account for unknowns.

The advantage of using offshore structures, such as rock mounds, is that access dredging is minimized and sheltered habitat is created behind the structures. The disadvantage is the large amount of rock required compared with the construction of nearshore structures such as rock wedges or rock groins. More rock is required in offshore structures because of placement in deeper water and the larger cross section required. The advantage of the rock/log structure is a more diverse substrate. The disadvantage is that the logs have to be placed just below low pool elevations to prevent decay. During floods, they may be less effective for this reason. The difficulty of constructing this rock/log structure is also an unknown.

A rock wedge will be constructed along approximately 280' of shoreline on the outer island as shown in Figure 3. The biggest advantage of this structure is the amount of rock used is much less than that used for offshore structures. The major disadvantage is that construction can only occur during high water. To try and access this site during normal river stages would require considerable access dredging, driving up the costs of the project. Small amounts of the material dredged for access could be used to enlarge the island; the rest would have to be barged to an approved placement site. For these reasons, construction of this rock wedge may not be done at the same time when the four offshore structures are constructed.

The offshore structures would be constructed by a crew from the USACE in April or May 2003. Access to the outer island is dependant on high water. Therefore, the project may be completed in two stages.

Table 1. Summary of structures proposed

Structure	Structure Type	Length	Cost per foot	Structure Cost
1	Rock Mound	225	\$120	\$27,000
2	Rock Mound	140	\$120	\$16,800
3	Rock Log Island	150	\$240	\$36,000
4	Rock Mound	235	\$120	\$28,200
5	Rock Wedge	280	\$24	\$6,700
Total for structures 1-5		1030		\$114,700

2.2.2 Alternative B (No Action)

Through this alternative, the shorelines of the islands in this complex would continue to erode, with no immediate action taken. Experience has shown that once the areal extent of an island area reaches a certain threshold, the island usually disappears in a matter of time. The eastern most island in this complex may be reaching this threshold. If all or part of this island complex disappears, restoration through the Environmental Management Program, or a similar program, may be possible. The time for this to occur would be measured in years.

2.2.3 Alternative C

Placement of nearshore structures along sections of eroding shoreline on all three islands would be completed under Alternative C. Nearshore structures include riprap or a biotechnical stabilization techniques such as rock groins, sand berms, and willows. The advantages of nearshore over offshore structures are that significantly less rock is required, which reduces costs, and that islands can be partially rebuilt using dredge material. The cost per linear foot to place rock along the shoreline is estimated at \$24. In contrast, the cost to construct one linear foot of rock mound ranges from \$100-120.

The major disadvantage of using nearshore structures is that a significant amount of access dredging would have to be done to reach these islands. This dredging could be disruptive to vegetation beds and mussels. Protecting nearly 850' of shoreline with nearshore structures would require dredging about eight channels for access for barges loaded with equipment, material, and supplies. Each channel would be an estimated 50' long and 65' wide. This would result in the dredging of about 4,900 cubic yards of fine, sloppy material. Small amounts of dredge material could be used to rebuild shoreline; the remainder would have to be loaded onto barges and transported to an undetermined placement site.

The cost of dredging and disposal may be \$73,500, assuming \$15 per cubic yard. The cost to purchase and place rock along 850' of shoreline would be about \$20,000 (\$24 per linear foot). Based on several assumptions and unknowns, the total estimated cost of the nearshore structures on the two islands would be \$94,000. Moreover, there could be additional costs for site preparation at the placement site, dredging for access to the permanent site, downtime because of limitations on equipment availability, and to cover other unknowns.

The cost of the proposed offshore mounds is estimated at \$90,000 without the integrated rock/log design, or \$108,000 with the rock/log design included. However, the number of unknowns and assumptions for the proposed action (Alternative A) is less than for this alternative (Alternative C). In summary, construction of the offshore is a more predictable procedure for this project.

To reduce the amount of access dredging required, another option is to construct the project during high water, which would be difficult to plan around and may work against the goal of protecting the shorelines of these islands as soon as possible. If nearshore structures are used, the sheltered aquatic habitat that develops behind offshore structures would not be created.

3. Affected Environment

3.1 Physical Characteristics

In 1824 Congress authorized the USACE to confine the Mississippi River flows to the main channel and to remove snags, shoals, rocks, and sandbars to aid navigation. In 1878 Congress authorized the USACE to maintain a 4.5' deep channel from the mouth of the Missouri River to St. Paul, MN; the Rivers and Harbors Act of 1907 increased the authorized depth to 6'. The Upper Mississippi River National Wildlife & Fish Refuge (UMRNW&FR) was established by an Act of Congress in 1924. The UMRNW&FR is located in Pools 4-14 of the Upper Mississippi River in the states of Minnesota, Wisconsin, Iowa, and Illinois. The Rivers and Harbors Act of 1930 authorized construction and maintenance of the current 9' channel by a system of locks and dams. The dams have raised water levels, creating a maze of channels, sloughs, marshlands, and open lakes over the bottomlands.

Increased water surface elevations and decreased current velocities through the river system have changed the configuration of the river bed since impoundment. Higher water levels have caused erosion of islands bordering the main channel, exposing other islands in the backwaters to greater wind fetch and wave action. The islands have been reduced over time by wave action and flood events. Wave action and flood events have also leveled the topographic relief of the backwater areas by reducing the height, number, and areal extent of islands and filling deeper areas. An influx of sand has filled some of the floodplain channels and formed deltas in the backwater areas.

3.2 Biological Environment

3.2.1 Habitat/Vegetation

Rosebud Island is located on Lake Onalaska, a nearly 7,400-acre backwater complex in lower Navigation Pool 7 that provides habitat supporting one of the premier Centrarchid fisheries on the Upper Mississippi River. Further, Lake Onalaska provides excellent habitat for wildlife, including significant percentages of the continental population of canvasback ducks and tundra swans. Rosebud Island (178 acres) and Red Oak Ridge Island (55 acres) are the two largest islands located on the lake. Several smaller islands are located in proximity to these two larger islands. Considerable habitat restoration work has been completed on Lake Onalaska in the past 15 years.

3.2.2 Threatened, Endangered, and Candidate Species

Two federally listed species are known to occur in Pool 7 of the Upper Mississippi River: the threatened bald eagle (*Haliaeetus leucocephalus*), and the endangered Higgins' eye pearly mussel (*Lampsilis higginsii*). The eastern massasauga rattlesnake (*Sistrurus catenatus*), which is a candidate species, has been found in the floodplain of the Upper Mississippi River. Bald eagles regularly use the Rosebud Island area during migration and also nest. The nearest active nest is located about 1.5 miles from the project site. The Higgins' eye pearly mussel has been found at several locations in Pool 7 near the main navigation channel. Suitable habitat for the eastern massasauga rattlesnake is located in the Black River Bottoms, a tributary of the Upper Mississippi River that flows into Pool 7.

Additional species classified by the State of Wisconsin as threatened (T), endangered (E), or special concern (SC) includes the following: American eel (*Anguilla rostrata*, SC); Vasey's pondweed (*Potamogeton vaseyi*, SC); mud darter (*Etheostoma asprigene*, SC); elusive clubtail (*Stylurus notatus*, SC); speckled chub (*Macrhybopsis aestivalis*, T); pugnose minnow (*Opsopoeodus emiliae*, SC); starhead topminnow (*Fundulus dispar*, E); weed shiner (*Notropis texanus*, SC); pirate perch (*Aphredoderus sayanus*, SC); western sand darter (*Etheostoma clara*, SC); black redhorse (*Moxostoma duquesnei*, E); pallid shiner (*Notropis amnis*, E); gilt darter (*Percina evides*, T); silver chub (*Macrhybopsis storeriana*, SC); smoky shadowfly (*Neurocordulia molesta*, SC); russet-tipped clubtail (*Stylurus plagiatus*, SC); large water-starwort (*Callitriche heterophylla*, T); red-shouldered hawk (*Buteo lineatus*, T); osprey (*Pandion haliaetus*, T); Blanchard's cricket frog (*Acris crepitans blanchardi*, E); wood turtle (*Clemmys insculpta*, T); Blandings turtle (*Emydoidea blandingii*, T); spectaclecase mussel (*Cumberlandia monodonta*, E); sheepnose mussel (*Plethobasus cyphus*, E); round pigtoe mussel (*Pleurobema sintoxia*, SC); butterfly mussel (*Ellipsaria lineolata*, E); yellow sandshell mussel (*Lampsilis teres*, E); slough sandshell mussel (*Lampsilis teres*, E); rock pocketbook mussel (*Arcidens confragosus*, T); salamander mussel (*Simpsonaias ambigua*, T); monkey face mussel (*Quadrula metanevra*, T); wartyback mussel (*Quadrula nodulata*, T); pistolgrip mussel (*Tritogonia verrucosa*, T); elktoe mussel (*Alasmidonta marginata*, CS); flatfloater (*Anodonta suborbiculata*,

SC); purple warty back mussel (*Cyclonaias tuberculata*, E); elephantear mussel (*Elliptio crassidens*, E); ebony shell mussel (*Fusconaia ebena*, E); washboard mussel (*Megaloniaias nervosa*, SC), black buffalo fish (*Ictiobus niger*, T); paddlefish (*Polyodon spathula*, T); blue sucker (*Cycleptus elongatus*, T); skipjack herring (*Alosa chrysochloris*, E); and goldeye (*Hiodon alosoides*, E).

3.3 Land Use

The Rosebud Island complex is owned by the USACE and managed by the Service as part of the UMRNW&FR.

3.4 Historic Properties and Cultural Resources

In accordance with the National Historic Preservation Act of 1966 (NHPA), as amended, the National Register of Historic Places has been consulted and no properties on the National Register are located in Section 31. All of Rosebud Island has been subjected to an archaeological survey (Rodell 1989B) that located sites and the southeast-most island was inspected (Boszhardt 1989B) with negative results. Eight archaeological sites have been reported in Section 31; an unnamed site has been reported in the project area (Boszhardt 1989B).

3.5 Local Socioeconomic Conditions

The Rosebud Island area of Lake Onalaska is a popular destination for sport anglers, waterfowl hunters, and for observing wildlife. Major cities in the study area and their populations include La Crosse, Wisconsin - 65,000 and Onalaska, Wisconsin - 15,000.

4. Environmental Consequences

4.1 Alternative A (Proposed Action)

4.1.1 Habitat and Biological Impacts

The construction of four offshore structures, including three rock mounds and one experimental rock/log island, and placing rock along a section of shoreline on the outer island in the complex, meets the goal of protecting the remaining island habitat, which in turn, protects about a diverse aquatic plant community of about 40 acres. This plant community is important habitat for fish, waterfowl, furbearers, and amphibians. The rock riprap would provide a coarse structure to improve the value of the area for fish species such as smallmouth bass. In addition, the rock substrate should also provide habitat for macroinvertebrates, including crayfish. Trees contained in the rock/log island structure are also designed to increase the habitat value for fish and macroinvertebrates. Some mussel mortality may occur during construction activities. Overall, the impacts should not be substantial because of the relatively small area of habitat affected by construction. The long-term impacts are expected to be positive.

4.1.2 Listed Species

Two, timed 60-minute (2 people for 30 minutes) pollywog/snorkeling mussel surveys were completed on 11 September 2002 within the proposed work area along the island complex off the southeast tip of Rosebud Island. Dan Kelner and Dennis Anderson from the St. Paul District, USACE, performed the surveys. Water depths in the survey areas ranged from 0.3 to 1.2 meters. Most of the area contained dense beds of submersed aquatic vegetation. Substrates ranged from loosely packed sand to muck. The area was very lentic in nature, with no visual current.

Eight commonly occurring mussel species were encountered, with giant floaters (*Pygandon grandis*), threeridge (*Ambema plicata*), and fat mucket (*Lampsilis silquoidea*) dominating the mussel assemblage (Appendix 1). No federally- or Wisconsin-listed endangered or threatened mussel species were encountered during the survey. The species assemblage found is typical of lentic habitat conditions. The lentic habitat conditions and the species assemblage found would indicate that the federally-listed Higgins' eye pearly mussel is not likely to be present in the project area.

Zebra mussel infestation on the native mussels was moderate, ranging from a few to many per native mussel. The zebra mussels were represented by a wide range of age classes, from very young to age 2.

No active bald eagle nests are located within one-mile of the proposed project. Also, no habitat for eastern massasauga rattlesnakes will be affected by the project. Given the results of the mussel surveys, the habitat requirements of the species, and the relatively small area affected by construction, this project is not likely to adversely affect federal or state-listed threatened/endangered species. Gary Wege of the Service's Twin Cities Field Office and David Heath of the Wisconsin Department of Natural Resources were consulted and concurred with this determination (addressed in completed Intra-Service Section 7 Biological Evaluation Form).

4.1.3 Historic Properties and Cultural Resources

Rosebud Island is owned in fee by the USACE. On 24 December 2002, the USACE agreed to be the lead federal agency for the Section 106 process, NHPA, and thus has assumed responsibility for defining the area of potential effect (APE) and identifying, evaluating, and mitigating as necessary, historic properties in the APE.

4.1.4 Cumulative Impacts

Stabilizing the eroding shorelines of islands in this complex increases the likelihood they will continue to provide habitat for a variety of wildlife. Moreover, this island complex protects nearly 80 acres of shallow backwater habitat; about 50% of these acres are vegetated with a diverse aquatic plant community that provides habitat for fish, waterfowl, other migratory birds, furbearers, and amphibians.

Resource agencies have made stabilizing the shorelines of existing islands a priority in recent years for the same reasons. Examples of similar projects in lower Pool 7 and Lake Onalaska include Island 91, Red Oak Ridge Island and several small islands that surround it, sections of Brice Prairie Barrier Island, and two islands in the barrier island chain located in the extreme southwest corner of the lake. Island creation has also occurred through the 1989 Lake Onalaska Environmental Management Program habitat project. Plans are being developed to stabilize additional sections of the Brice Prairie Barrier Island damaged during the 2001 flood.

Also, based on public scoping meetings held in September in the La Crosse area for the development of the UMRNW&FR's Comprehensive Conservation Plan, the public expressed the need to protect shorelines of islands now rather than rebuilding islands later.

The proposed project would have minimal or no impacts on the following socioeconomic categories: transportation, public health and safety, community cohesion, community growth revenues, regional growth, employment, business activity, food supply, navigation, flooding effects, or energy resources.

Noise Pollution - the immediate vicinity around the project area would be temporarily disrupted by construction activities. Some disturbance may occur from noise and human activity, although these impacts are temporary, and adverse impacts to the general public would be short-term.

Recreation and Aesthetic Values - the presence of construction equipment would have a temporary negative effect on aesthetic values in the area. It is expected that most of the material, supplies, and equipment would be loaded/unloaded at the USACE facility at Lock and Dam 7. Mosey Landing, located north of the project site off County Trunk Highway Z, may be used for loading the logs. The Town of Onalaska operates and maintains this landing through an agreement with the USACE. The Town will be contacted for their approval. If the landing is used, the loading of logs will be scheduled to minimize the amount of time the landing is blocked.

4.1.5 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 59 Federal Register 7629 (1994), directs federal agencies to incorporate environmental justice in their decision-making process. Federal agencies are directed to identify and address as appropriate, any disproportionately high and adverse environmental effects of their programs, policies, and activities on minority or low-income populations.

No environmental justice issues exist for the proposed action. Rosebud Island is currently unoccupied and unused for agricultural, industrial, or any other economic activity. This alternative would not create any environmental pollution. No minority or low-income populations would be displaced or negatively affected in any other way by the proposed action.

4.2 Alternative B (No Action)

4.2.1 Habitat and Biological Impacts

The complex of three small islands protects beds of submersed and rooted floating aquatic plants from excessive wave action. Currently, about 80 acres of shallow backwater habitat are protected, and nearly 50% of these acres are vegetated. Through this alternative, no effort would be made to stabilize the shorelines of the three islands; they would continue to erode. From 1979 to 2001, about 20% of the areal extent of this complex was lost due to erosion. Without stabilization, island loss is expected to continue, with the outer island likely to disappear altogether. As the islands are reduced in size or lost altogether, the amount of protected shallow backwater habitat would also decrease. Because this habitat type supports a diverse aquatic plant community, fewer vegetated acres would be available for fish, waterfowl, other migratory birds, furbearers (muskrats), and amphibians. The islands also provide habitat for a variety of wildlife including birds (songbirds, raptors, wading birds, and nesting waterfowl) and mammals (deer and raccoons).

4.2.2 Listed Species

Under the No Action Alternative, no construction activity would occur. Therefore, this alternative would not affect threatened/endangered species or their critical habitat.

4.2.3 Historic Properties and Cultural Resources

Archaeological sites would be adversely affected by continued erosion of the islands. If these islands would erode away, wave action would likely increase and accelerate erosion on nearby islands.

4.2.4 Cumulative Impacts

Resource agencies have made stabilizing the shorelines of existing islands a priority in recent years. Erosion by waves, ice, and river currents has reduced the number and acreage of islands in Lake Onalaska and the lower section of other pools. When islands are lost, the habitat they provide to a variety of species is lost, and the vegetation beds they help protect are usually lost or reduced in size, diversity, and quality. Therefore, the No Action Alternative is not supportive of recent efforts to protect existing islands, nor is it in line with the public's interest in protecting the shorelines of islands rather than rebuilding islands after they have eroded away.

4.2.5 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 59 Federal Register 7629 (1994), directs federal agencies to incorporate environmental justice in their decision-making process. Federal agencies

are directed to identify and address as appropriate, any disproportionately high and adverse environmental effects of their programs, policies, and activities on minority or low-income populations.

No environmental justice issues exist for the no action alternative. Rosebud Island is currently unoccupied and unused for agricultural, industrial, or any other economic activity. This alternative would not create any environmental pollution. No minority or low-income populations would be displaced or negatively affected in any other way by this alternative.

4.3 Alternative C

4.3.1 Habitat and Biological Impacts

Placement of rock along the downstream shorelines of each of the three islands in this complex meets the goal of protecting the remaining island habitat, which in turn, protects a diverse aquatic plant community of about 40 acres. This plant community is important habitat for fish, waterfowl, furbearers, and amphibians. Rock placed along the shoreline would provide a coarse structure to improve the value of the area for fish species such as smallmouth bass. In addition, the rock substrate should also provide habitat for macroinvertebrates, including crayfish. If access dredging is needed, the areas dredged could provide winter habitat for Centrarchids if the right conditions develop. The disadvantages of dredging include possible disturbance to mussels and vegetation beds; some mussel mortality may also occur. Pursuing this alternative does not allow for the construction of the experimental rock/log structure, which is designed to increase the habitat value for fish and macroinvertebrates. Overall, the short term impacts to mussels and vegetation beds in and around these islands could be substantial depending on the amount of area disturbed by dredging. The long-term impacts would be expected to be positive.

4.3.2 Listed Species

As explained in Section 4.1.2, two, timed 60-minute (2 people for 30 minutes) pollywog/snorkeling mussel surveys were completed on 11 September 2002 within the proposed work area along the island complex off the southeast tip of Rosebud Island. Dan Kelner and Dennis Anderson from the St. Paul District, USACE, performed the surveys and prepared the report.

Eight commonly occurring mussel species were encountered, with giant floaters (*Pygandon grandis*), threeridge (*Ambema plicata*), and fat mucket (*Lampsilis silquoidea*) dominating the mussel assemblage (Appendix 1). No federally- or Wisconsin-listed endangered or threatened mussel species were encountered during the survey. The species assemblage found is typical of lentic habitat conditions. The lentic habitat conditions and the species assemblage found would indicate that the federally-listed Higgins' eye pearly mussel is not likely to be present in the project area.

Zebra mussel infestation on the native mussels was moderate, ranging from a few to many per native mussel. The zebra mussels were represented by a wide range of age classes, from very young to age 2.

Under this alternative, access to the islands to construct the rock wedge would occur during high water to minimize the amount of dredging required, or via dredging access channels. Access during high water would be difficult to plan, plus the window of opportunity may be narrow in most years and nonexistent other years. Dredging access channels increases the amount of site disturbance and impacts to mussels and their habitat.

No active bald eagle nests are located within one-mile of the proposed project. Also, no habitat for eastern massasauga rattlesnakes will be affected by the project. Given the results of the mussel surveys, the habitat requirements of the species, and the relatively small area affected by construction, this project is not likely to adversely affect federal or state-listed threatened/endangered species.

4.3.3 Historic Properties and Cultural Resources

Rosebud Island is owned in fee by the USACE. On 24 December 2002, the USACE agreed to be the lead federal agency for the Section 106 process, NHPA, and thus has assumed responsibility for defining the area of potential effect (APE) and identifying, evaluating, and mitigating as necessary, historic properties in the APE.

4.3.4 Cumulative Impacts

Stabilizing the eroding shorelines of islands in this complex increases the likelihood they will continue to provide habitat for a variety of wildlife. Moreover, this island complex protects nearly 80 acres of shallow backwater habitat; about 50% of these acres are vegetated with a diverse aquatic plant community that provides habitat for fish, waterfowl, other migratory birds, furbearers, and amphibians.

If access dredging is needed, the areas dredged could provide winter habitat for Centrarchids if the right conditions develop. Depending on the amount of dredging required, the disadvantage is the disturbance it causes to mussels and plant beds.

Resource agencies have made stabilizing the shorelines of existing islands a priority in recent years. Minimizing the amount of access dredging required has been a goal of many of these projects.

Based on public scoping meetings held in September in the La Crosse area for the development of the UMRNW&FR's Comprehensive Conservation Plan, the public expressed the need to protect shorelines of islands now rather than rebuilding islands later.

4.3.5 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 59 Federal Register 7629 (1994), directs federal agencies to incorporate environmental justice in their decision-making process. Federal agencies are directed to identify and address as appropriate, any disproportionately high and adverse environmental effects of their programs, policies, and activities on minority or low-income populations.

No environmental justice issues exist for this alternative. Rosebud Island is currently unoccupied and unused for agricultural, industrial, or any other economic activity. This alternative would not create any environmental pollution. No minority or low-income populations would be displaced or negatively affected in any other way by Alternative C.

4.4 Summary of Environmental Consequences by Alternative

Consequences	Alternative A	Alternative B	Alternative C
Islands Stabilized	Yes, with offshore structures and rock wedge	No, islands will continue to erode and may disappear	Yes, with rock wedge
Access Dredging	Minimal, for access to small island only	No Action	Amount and extent varies depending on water levels
Site Disturbance	Localized	No Action	Varies depending on how area accessed
Plant Beds Affected	Localized	With potential loss of islands for protection, beds may be impacted	Dependant on how much access dredging needed
Mussels Affected	Localized around construction area	Potential loss of islands may change lake bottom and mussel habitat	Dependant on how much dredging needed
Listed Species	Not likely to adversely affect state/federal listed species	Loss of islands may affect state/federal listed species	Not likely to adversely affect state/federal listed species
Cultural Resources	Sites protected	Sites may be impacted by continued erosion	Sites protected
Short-term Impacts	Localized and minor	Continue erosion of islands	Varies depending on how area accessed
Long-term Impacts	Positive	Negative	Positive

5. List of Preparers

This Environmental Assessment was prepared by staff of the La Crosse District of the UMRNW&FR, Onalaska, Wisconsin and reviewed by David Heath, Wisconsin Department of Natural Resources; Gary Wege, U.S. Fish and Wildlife Service, Twin Cities Field Office; and Don Powell, Jon Hendrickson, Dennis Anderson, Brad Perkl, and Randy Urich, U.S. Army Corps of Engineers, St. Paul District.

6. Consultation and Coordination With the Public and Others

U.S. Fish and Wildlife Service personnel met with staff from the Wisconsin Department of Natural Resources on 11 July 2002 to discuss the need for the project, identify potential alternatives for repair, and review permit needs. On 30 August 2002, Service personnel met with representatives from a number of organizations and agencies with interest in Lake Onalaska and Rosebud Island to discuss the need for the project and identify potential alternatives. The organizations and agencies in attendance were: La Crosse County Conservation Alliance, Brice Prairie Conservation Association, Lake Onalaska Protection and Rehabilitation District, Town of Onalaska, La Crosse County, UW-Extension Services, and U.S. Army Corps of Engineers.

This draft Environmental Assessment was sent to the above-mentioned organizations, local units of government, agencies, and others, with a request for comments. The public was also notified of the availability of this document along with an invitation to provide comments through a news release issued 28 February 2003 (Appendix 2). Comments were accepted through 10 March 2003.

Articles appeared in at least three local newspapers announcing the plan (Appendix 3). Representatives from the following organizations, local units of government, and state and federal agencies with interest in the plan also received copies: La Crosse County Conservation Alliance, Brice Prairie Conservation Association, Lake Onalaska Protection and Rehabilitation District, Town of Onalaska, La Crosse County, Wisconsin Department of Natural Resources, and U.S. Army Corps of Engineers. The plan was also discussed, or copies of the Environmental Assessment were made available, at the following public meetings: monthly meeting of the Brice Prairie Conservation Association on 26 February (20 members present); monthly meeting of the La Crosse County Conservation Alliance on 3 March (15 members and agency staff in attendance); and the UMRNW&FR's Closed Area Informational Meeting on 4 March (25 in attendance). Copies of the plan were also available to review at the La Crosse District Office of the UMRNW&FR.

7. Public Comment on Draft EA and Response

Verbal comments were received from a number of individuals. One commenter suggested the rock wedge should be extended around the west side of the outer island to protect the shoreline from southwest winds. *Agency response:* the west side of the island receives protection from the

next island in the chain; however, if rock is available after the targeted sections of shoreline are completed, this section of shoreline will be the next priority.

Several people commented on the fact that the agencies did not show much interest in the past in riprapping islands such as these. The feeling was expressed that the agencies should have been doing this years ago when there were still many islands on Lake Onalaska. *Agency response:* prior to the Environmental Management Program (1986) and other programs, funds were not as available to tackle projects such as this. Prior to the late 1980's, shoreline stabilization projects on Lake Onalaska tended to be small-scale with most of the work done in those winters when conditions permitted truck travel on the ice. Further, the Environmental Management Program resulted in better communications between the public and agencies, which results in a better understanding of needs and priorities. Another by-product of this program was the formation of effective partnerships involving local units of government, organizations, and agencies, which has been successful in pooling resources to accomplish mutual goals. This project is an example of that partnership.

One individual suggested that when riprapping shorelines in the future, gaps should be left in the riprap so that people can safely access the island without climbing over rocks. Boats can also be moored in these gaps. *Agency response:* with this project, only about half of the shoreline on the outer island would be riprapped, leaving the other half without rock. The commentor makes a good point and one that will be followed, where possible, in future projects.

One individual also inquired if any other shoreline protection projects were planned on islands in the southeast corner of the lake. *Agency response:* there are no other projects scheduled for the southeast corner of the lake at this time. The next project on Lake Onalaska is scheduled for the Brice Prairie Barrier Island and will likely be a project similar to what is planned for this island complex.

Written comments were received from two individuals and the Wisconsin Department of Natural Resources. Both individuals commented favorably on the plan. Moreover, one of the written comments addressed the experimental rock/log island and thought it was an excellent idea and worth trying. The agency letter and Service response appears in Appendix 4 and 5.

Appendices

- Appendix 1 Mussel Surveys for the Proposed Stabilization of the Archipelago Islands Near Rosebud Island, Lake Onalaska, Pool 7, Upper Mississippi River
- Appendix 2 News Release
- Appendix 3 Copies of Newspaper Articles
- Appendix 4 Copy of Wisconsin Department of Natural Resources Comment Letter
- Appendix 5 U.S. Fish and Wildlife Service Response to Wisconsin Department of Natural Resources Comment Letter